CONFERENCE SCIENTIFIC PROGRAM

Sunday, April 29, 2018

3:00 pm  Registration opens  Mezzanine Level

5:00–8:45  Opening Session  Meridian Ballroom

5:00–5:20  Conference Welcome and Introductions
          Srirama Rao, Chair, iCOMOS, University of Minnesota


           Moderator: Kerri Miller, Minnesota Public Radio

           Session Panelists:
           Peter Agre, Nobel Laureate in Chemistry, United States
           Peter Doherty, Nobel Laureate in Physiology or Medicine, Australia
           Hualan Chen, L’Oreal-UNESCO Women-in-Science Laureate, China
           Robert Mwanga, World Food Prize Laureate, Uganda

7:15–8:45  Opening Reception and Networking  Meridian Foyer
Monday, April 30, 2018

7:00–8:00 am  Continental Breakfast  Meridian Foyer

8:00–8:15  University Welcome  Meridian Ballroom

_Eric Kaler_, President, University of Minnesota,

8:15–9:00  Plenary Presentation: Opening Doors Worldwide through Medical Science

Nobel Laureate _Peter Agre_, University Professor & Director, Johns Hopkins Malaria Research Institute, Johns Hopkins University, United States

9:00–12:00 pm  Session I: Social and Economic Impacts on Health

9:00-9:05  Moderators: _Laura Bloomberg, Kaylee Errecaborde_, University of Minnesota

_Session summary:_ The structural determinants and conditions in which people are born, grow, live, work and age. These social determinants of health include factors like socioeconomic status, education, the physical environment, employment, and social support networks, as well as access to health care. Within this conference we will focus specifically on migration, age, poverty/well-being and the challenges of antimicrobial resistance and how these topics influence health and policy.

09:05-9:35  Migration and health

_Eric Schwartz_, President and CEO designate, Refugees International, United States

9:35–10:05  Familial early onset Alzheimer Disease in Colombia: An opportunity for prevention

_Francisco Lopera_, Universidad de Antioquia, Colombia

10:05-10:30  Networking Break

10:30–11:00  Social and behavioral drivers of antimicrobial resistance

_Ramanan Laxminarayan_, The Center for Disease Dynamics, Economics & Policy; Princeton University, United States

11:00–11:30  Addressing societal norms that affect well-being through transectoral collaboration: examples from the field

_Lynne Gaffikin_, Stanford University, United States

11:30– noon  Panel Discussion

Noon–1:00 pm  Networking Lunch (and/or Special Lecture)  Meridian Ballroom
Session II: Infectious Disease and Environmental Disturbance

Meridian Ballroom

1:00-1:05 Moderators: Srinand Sreevatsan, Michigan State University; Nick Phelps, University of Minnesota

Session summary: Speakers will present science issues surrounding infectious diseases as they pertain to emerging, zoonotic and other infectious diseases. The session will end with a panel discussion of issues. A major outcome of this session is expected to be a monograph on problems and expert suggestions of mitigation strategies.

1:05-1:35 Predicting & preventing emerging infectious diseases
Jonna Mazet, University of California, Davis, United States

1:35-2:05 Pandemic avian influenza: the Chinese experience
Hualan Chen, L'Oreal-UNESCO Women-in-Science Laureate, Harbin Veterinary Research Institute, China

2:05-2:35 Viral biocontrol of invasive vertebrates: An Australian perspective
Ken McColl, CSIRO, Australia

2:35-3:00 Networking Break

3:00-5:45 Poster Presentations
Summit and Meridian Foyer

6:00-6:30 Social Hour
McNamara Alumni Center

6:30-7:30 Dinner
McNamara Alumni Center

7:30-8:15 Featured Presentation:

Introduction: Karen Hanson, Executive Vice President and Provost, University of Minnesota

The Killer Defense
Nobel Laureate Peter Doherty, University of Melbourne, Australia
Tuesday, May 1, 2018

7:30–8:25 am  Continental Breakfast  Meridian Foyer

8:00–8:05  Welcome to Day 2
Trevor Ames, Dean, College of Veterinary Medicine, University of Minnesota

8:05–noon  Session III: Agriculture Advancing Health

Session summary: The future of global health is inextricable linked to agriculture, the key source of human and animal nutrition and energy. The session highlights the central role of agriculture in improving health, along with economic and policy issues that intersect with science. Speakers in this session will explore engineering and genetic selection of plants for production of medicines and vaccine delivery in food, growing healthy food in stressed environments, and enhancement of food qualities that limit waste, increase nutrition, and increase economic return.

8:05 - 8:10  Moderators: Greg Cuomo and Dan Voytas, University of Minnesota

8:10–8:40  Plant modification to reduce hunger and improve health
Robert Mwanga, World Food Prize Laureate, Uganda

8:40–9:10  Public sector constraints to plant biotechnology for human health: the Golden Rice experience
Adrian Dubock, Golden Rice Project, Switzerland

9:10–9:40  Plants engineered to improve health
Dan Voytas, University of Minnesota, United States

9:40-10:20  Networking Break

10:20–10:50  The science and politics of livestock production in the era of gene editing
Alison Van Eenennaam, University of California, Davis, United States

10:50–11:20  Unravelling the food–health nexus
Cecilia Rocha, Director and Professor, Ryerson University, Canada

11:20–11:50  Moderated Panel: International aspects of food enhancement and nourishment

11:50–12:00  Break and Lunch Set-up

12:10–1:30 pm  Lunch and Featured Speaker  Meridian Ballroom

Space, environment and health
Pamela Melroy, NASA Astronaut and Space Shuttle Commander, USA
### Session IV: New Paradigms at the Environment-Health Interface

**Session summary:** All health problems have an environmental component at some level, yet recognizing and focusing solutions on environmental linkages remains a challenge. Speakers in this session will highlight emerging scientific paradigms—new methods, approaches or policies that offer new ways of exploring connections between human, animal and environmental health—and the potential for fostering discovery and novel solutions to complex one health problems. Speakers and panel discussants will present emerging approaches directed toward long-term, multi-disciplinary, inter-sectoral health research and policy making.

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<tr>
<td>1:30-1:35</td>
<td>Moderators: <em>Bruce Alexander</em>, University of Minnesota; <em>Kimberly Thigpen Tart</em>, National Institute of Environmental Health Sciences, NIH</td>
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| 1:35-2:20| **PLENARY TALK:** *Environmental health without and within: from ecosystems to communities to the microbiome*  
*Linda Birnbaum*, Director, National Institute of Environmental Health Sciences, National Institutes of Health, US Department of Health and Human Services, United States |
| 2:20-2:35| **Environmental health through the lens of global urbanization**  
*Maria Neira*, Director, Department of Public Health, Environmental and Social Determinants of Health, World Health Organization, Switzerland |
| 2:35-3:00| **Climate change and health**  
*Kristie Ebi*, Director of the Center for Health and the Global Environment, University of Washington, Seattle, United States |
| 3:00-3:20| Networking Break |
| 3:25-3:50| **Planetary health: protecting global health on a rapidly changing planet**  
*Samuel Myers*, Director, Planetary Health Alliance, United States |
| 3:50-4:40| **Panel discussion: new education and policy paradigms at the interface of environment and health**  
**Moderators:** *Jessica Hellmann* and *Dominic Travis*, University of Minnesota |
| 4:40-4:55| **Overview of iCOMOS-2019 and iCOMOS-2020**  
Chiang Mai University, Thailand (iCOMOS 2019)  
Universidad Andres Bello, Chile (iCOMOS 2020) |
| 4:50-5:00| **Outlook for the future and overview of the Concurrent Interactive Sessions**  
*Michael Murtaugh*, Co-Chair, iCOMOS 2018, University of Minnesota |
| 5:00     | Free time (on your own) |
**Wednesday, May 2, 2018**

7:30–8:25 am  Continental Breakfast  
Meridian Foyer

8:30–9:00  
**Plenary Talk:** Local to global prediction of weather, pestilence, plagues and famine  
*Juli Trtanj,* Climate and Health Lead, National Oceanic and Atmospheric Administration, USA

9:00–9:15  
Rearrangement of rooms for Concurrent Interactive Sessions

9:15 am – 5:00 pm  Concurrent Interactive Sessions

**CIS1:** One Medicine One Science Approaches to Health at Two NIH Institutes

**CIS2:** Effective Policy when Consumer Preferences (Food and Health) Do Not Match Actions

**CIS3:** Breaking Silos and Building Bridges Within and Across Geographies for One Medicine One Science Policy

**CIS4:** Precision Medicine and Genome Editing: Science and Ethics

**CIS5:** Science Communication and Strategic Engagement of Policy Makers
This workshop will explore One Medicine One Science (OMOS) approaches applied at two NIH institutes to complex human health issues requiring coordinated, multi-disciplinary research programs and teams. Senior institute staff and funded investigators of the National Institute of Allergy and Infectious Disease (NIAID) and the National Institute of Environmental Health Sciences (NIEHS) will lead discussions of (a) Zika as a case study of an emerging disease and pandemic threat, and (b) studies of chronic disease resulting from the interactions of living systems with environmental threats such as chemicals and other contaminants that affect human health. Presentations will feature diverse NIH-supported OMOS-related research studies and will discuss methods and resources for integrating OMOS approaches into aspects of infectious disease and environmental research including surveillance, epidemiology, prevention and intervention, data collection and analysis, partnership building, and training and capacity building.

9:15 - 9:30  Introduction: One Medicine, One Science at Two Institutes of the NIH  
Hortencia Hornbeak, NIAID, NIH; Linda Birnbaum, Director, NIEHS, NIH

OMOS at NIAID: Zika Case Study, Moderator: Peter Jackson or Hortencia Hornbeak, NIAID

9:30-9:55  Zika epi/control/pathology  
Esper Kallas, U of Sao Paolo, Brazil

9:55–10:20  Zika in infants and pregnancy study  
José Cordero, University of Georgia, United States

10:20–10:35  Refreshment Break

10:35–11:00  Preclinical and clinical development of Zika virus vaccines  
Dan Barouch, Harvard Medical School, United States

11:00-11:25  Vaccine preparedness for viral pandemics  
Barney Graham, NIAID, NIH Vaccine Research Center, United States

11:25-12:00  Panel discussion and Q&A

12:00-1:00  Networking Lunch

OMOS in Environmental Health Research, Moderator: Heather Henry, NIEHS

1:00–1:25  The use of sentinel species in health disparities research  
Frank Von Hippel, Northern Arizona University, United States

1:25-1:50  Chronic kidney disease, pollution and sentinel species in Sri Lanka  
Nishad Jayasundara, University of Maine, United States

1:50-2:15  One Health approach to the impacts of the Deepwater Horizon oil spill  
Maureen Lichtveld, Tulane University, United States

2:15-2:35  Q&A/Discussion

2:35-2:50  Refreshment Break
2:50-5:00 Programs, resources, and tools for integrating One Medicine, One Science approaches to health - Moderator: Kimberly Thigpen Tart, NIEHS

2:50-3:10 Mechanisms and language that NIAID uses to support research in a OMOS framework
Peter Jackson, NIAID, NIH

and

Programs and funding mechanisms used to support research in a OMOS framework: SRP (incl. SBIR/STTR, DR2)
Heather Henry, NIEHS, NIH

3:10-3:35 Global training and capacity building
John Balbus, NIEHS, Global Environmental Health Program and WHO Collaborating Centre, United States

3:35-4:00 Building clinical and research capacity
Gray Handley, NIAID OGR, United States

4:00-4:35 Global perspectives on access to bio-samples and data sharing
Yaffa Rubinstein, U.S. National Library of Medicine, United States

4:35–4:45 Q&A/Discussion

4:45-5:00 Wrap Up
Heather Henry, NIEHS, NIH; Peter Jackson, NIAID, NIH

5:00-6:00 Small meetings with NIH administrators
CIS #2: Effective Policy when Consumer Preferences (Food and Health) Do Not Match Actions  
Coordinator: Shaun Kennedy, University of Minnesota

The public in general or a significant subset often drive specific food and health policies as governments and the private sector attempt to meet their expressed desires. The challenge for effective policy implementation, however, is that consumers do not always choose health behaviors or foods that are consistent with their priorities. This is especially challenging when consumers make choices based on one priority that appears to conflict with other expressed priorities. While not a new concept in philosophy or what is sometimes called moral mathematics, it is not generally applied when developing and implementing health and food policies. This is easy to understand when it is an economic priority, cost, overriding a personal priority, enhanced food safety, with simple choices such as not purchasing irradiated ground beef for food safety due to the cost of irradiation. It becomes far more complicated to implement effective policy when it is more nuanced such as consumers making health or food choices that are demonstrably less favorable to their own family’s health or the environment than alternatives. This workshop will look at how to consider health or food policies in the face of competitive, unexpressed or conflicting priorities and the extent to which the policies can achieve their objectives. It will draw beyond policy experts to include experts in consumer behavior, individual to group dynamics, game theory and economics from the academic, public and private sectors to consider policy differently.

Anticipated Outcomes from the Session and group discussion include at least two papers: (1) On the similarities between outwardly very different policy areas (obesity, food safety, food security and autism; (2) Proposed new strategies to address these important policy areas.

Keynote
9:15-10:00 Food and health policy in a time of unprecedented challenges  
Case Studies in Priorities and Choices Conflicts

10:00-10:30 How consumers really make food purchasing decisions, not how they say they do  
Darren Seifer, Industry Analyst - Food Consumption, The NPD Group

10:30-10:40 Break

10:40-11:10 Consumer behavior, policy and obesity  
Damian Tago Pacheco, Food and Agriculture Organization, United Nations, Thailand

11:10-11:40 The politics surrounding autism  
Dana Baker, California State University Channel Islands, United States

11:40-12:10 Non-regulatory approaches to food security: examples from Brazil  
Cecilia Rocha, Ryerson University, Canada

12:10-1:30 Networking Lunch

1:30-2:15 Voting Procedures to Choose Leaders and Policies That Produce Consensus (Rather Than Division)  
Steven Brams, New York University, United States
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<td>2:15-3:15</td>
<td>Exploring the gaps between policy and behavior</td>
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<td>Small Group Discussions</td>
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<td>3:15-3:35</td>
<td>Reporting Back</td>
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<tr>
<td>3:35-4:30</td>
<td>New strategies for regulatory and non-regulatory policy</td>
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<tr>
<td></td>
<td>Small Group Discussions</td>
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<tr>
<td>4:30-5:00</td>
<td>Reporting Back and Conclusions</td>
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<td>5:00</td>
<td>Session ends</td>
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Despite an increasingly popular One Health rhetoric, authentic examples of multiple disciplinary efforts to transcend the traditional silos of public, animal, and environmental health are still rare. The ultimate goal of COMOS is to contribute to securing food and protecting health of human, animals, and the environment through a network of equal partners. Prerequisite for accomplishing that goal is the development of the required workforce to identify problems and provide solutions to recurrent and emerging grand challenges regionally and globally. In this workshop, we will provide an overview of needs assessment and implementation programs in the areas of food animal trade and one health. Capacity building programs, including issues related with needs assessment, implementation, and evaluation, for veterinary and public health will be presented. Multisectoral approaches to identify and address emerging needs and issues will be introduced. Regional perspectives on gaps and challenges will be discussed. Finally, a debate focused on particular opportunities identified during the session for workforce development at regional and global scales will be promoted.

Audience: Scientists, intergovernmental organizations, students, industry partners, and stakeholders engaged or interested in workforce development and education on ecosystems health, agribusiness, food production, economics and policy regionally and globally.

Outcome:
1. A “perspective” paper outlining the vision for workforce development in the context of COMOS
2. Proposals for workforce development and capacity building of veterinary services and One Health, promoting regional and global alliances
3. Outline plans for the organization of iCOMOS in the Ibero-American region in 2020

Timeline: Completion of paper within 3 months of the workshop to be shared with funding agencies and sponsors. Continue to support regional activities for COMOS.

Scientific value: Outline of a plan for development of educational and outreach programs in the context of COMOS

Program

SESSION 1
Unfolding the OMOS paradigm shift through capacity building programs
Moderator: Andres Perez, University of Minnesota

9:15-9:30
Presentation, introduction, and expectations
Andres Perez

9:30-10:05
Implementing programs for capacity building at a global scale – Joint presentation
Speakers from the OIE collaborating centers on capacity building:
Agnes Leblond, ENSV, Lyon, France
Emilio León, CEBASEV, Buenos Aires, Argentina

10:05-10:20
Break
10:20-10:50  Field Epidemiology Training Program (FETP) and Field Epidemiology Training Program for Veterinarians (FETPV): expanding the global public health workforce across human and animal health
   Stephanie Salyer, CDC, United States

10:50-11:20  Building global and national capacity to meet international public health standards
   Stéphane de la Rocque, WHO, France

11:20-11:50  Challenges and opportunities on building a global One Health Workforce
   Katey Pelican, University of Minnesota, United States

11:50-12:00  Conclusions and introduction to Session 2
   Andres Perez, University of Minnesota, United States

12:00 – 1:30  LUNCH BREAK

SESSION 2  Diagnosing regional gaps and emerging challenges to prioritize multisectoral opportunities
   Moderators: Aziz Arda Sancak, Ankara University, Turkey, and Katey Pelican
   University of Minnesota, United States

1:30-1:40  Emerging issues in Latin America and emerging needs for workforce development
   Enrique Perez, PAHO, United States

1:40-1:50  Improving multisectoral health responsibility in Turkey: opportunities and challenges for health
   Irfan Sencan, Turkish Public Health Institute, Ministry of Health, Turkey

1:50-2:00  Emerging needs and opportunities for capacity building in aquaculture
   Fernando Mardones, Universidad Andres Bello, Chile

2:00-2:10  Emerging needs and opportunities for capacity building in Western Africa
   Yalace Kaboret, Ecole Inter-Etats des Sciences et Medecine Veterinaires, Dakar, Senegal

2:10-2:20  Emerging needs and opportunities for capacity building in Southern Asia
   Tongkorn Meeyam, Chiang Mai University, Thailand

2:20-3:00  Interactive discussion - Table topics

3:45-4:15  Roundtable synthesis & reflections / Final remarks
CIS #4: Precision Medicine and Genome Editing: Science and Ethics

Coordinators: Clifford Steer, Pamala Jacobson, University of Minnesota, and Kavita Berger, Gryphon Scientific

According to the NIH, precision medicine is "an emerging approach for disease treatment and prevention that takes into account individual variability in genes, environment, and lifestyle for each person." It refers to the tailoring of medical treatment to the individual characteristics of each patient and the ability to classify individuals into subpopulations that differ in the biology, susceptibility and response to treatment for a particular disease. In January 2015, the US President launched the Precision Medicine Initiative (PMI), a bold new research effort to revolutionize how we improve health and treat disease, empowering health care providers to tailor treatment and prevention strategies to individuals’ unique characteristics. Gene editing uses engineered nucleases or so-called “molecular scissors” to make changes to specific DNA sequences in the genome of a living organism. They include meganucleases, zinc finger nucleases (ZFNs), transcription activator-like effector-based nucleases (TALENs), and the clustered regularly interspaced short palindromic repeats (CRISPR)-Cas system. Genome editing is being developed to treat not only genetic diseases but also infectious diseases and those that have both a genetic and an environmental component. It is now widely used in biomedical research, including creation of disease models with desired genetic mutations, screening in a high-throughput manner for drug resistance genes, and making appropriate editions to genes in vivo for disease treatment. All of these applications have been facilitating the development of precision medicine research.

9:15am  Welcome
Clifford Steer, University of Minnesota

9:30-10:45  Rewriting the Genome
Speakers will discuss the state-of-the-science for precision medicine and genome editing, highlighting the key advances and limitations of each. Speakers will discuss new applications enabled by precision medicine and/or genome editing.
Moderator: Clifford Steer, University of Minnesota

9:35-10:00  Gene editing enters the food supply
Dan Voytas, University of Minnesota, United States

10:00-10:25  Precision swine models of human disease by gene editing
Dan Carlson, Recombinetics, Inc., United States

10:25-10:45  Targeted nucleases for finding cancer drivers and vulnerabilities
David Largaespada, University of Minnesota, United States

10:45-11:00  Coffee Break

11:00-12:30  Precision public health? The evolving paradigm in health and medicine
Speakers will discuss the implications of precision medicine on public health, describing specific examples where precision medicine limit or enhance public health. Speakers will highlight specific challenges and describe approaches for addressing those challenges.
Moderator: Pamala Jacobson, University of Minnesota
11:10-11:35  **Personalized medicine vs. public health: contradictory or complementary?**  
*Nancy Cox, Vanderbilt University, United States*

11:35-12:00  **Integrating pharmacogenomic information into practice**  
*Richard Weinshilboum, Mayo Clinic, United States*

12:00-12:30  **Million Veterans Program: improving care through large scale genomics**  
*Ronald Przygodzki, U.S. Department of Veterans Affairs, United States*

12:30-1:30 pm **Lunch**

1:30-3:00  **Societal Considerations of Ethics, Safety, and Security**  
Speakers will discuss the ethical, safety, and security concerns associated with precision medicine and/or genome editing.  
**Moderator: Kavita Berger, Gryphon Scientific**

1:40-2:05  **Can we ethically modify our genomes?**  
*Debra Mathews, Johns Hopkins University, United States*

2:05-2:30  **Safeguarding the bioeconomy**  
*Edward You, U.S. Federal Bureau of Investigation, United States*

2:30-3:00  **Ensuring the safety of human genome editing at home and abroad.**  
*Gary Marchant, Arizona State University, United States*

3:00-3:20  **Coffee Break**

3:20-4:30  **Pros and cons: applications of Precision Medicine and Genome Editing**  
The moderator will prompt discussants to consider and describe the pros and cons of precision medicine, genome editing, and the integration of both fields towards human health.  
**Moderator: Stephanie Huang, University of Minnesota, United States**  
Panelists will be selected from speaker pool

4:30  **Adjourn**
CIS #5: Science Communication and Strategic Engagement of Policy Makers
Coordinators: Dominic Travis, University of Minnesota; Emily Cloyd, American Association for the Advancement of Science (AAAS)

Join your colleagues for an American Association for the Advancement of Science Communicating Science workshop specifically designed to help you plan and participate in a wide variety of public engagement activities. During this workshop, you will develop your public engagement and science communication skills through discussion, self-reflection, small-group work and practice sessions. The workshop focuses on the importance of effective, two-way communication and is designed to enable you to engage in meaningful, reciprocal dialogue with diverse audiences. When the session is complete, you will be able to clearly identify a public engagement goal, define a relevant audience, and craft and rehearse messages tailored to that audience.

9:15-12:15 Science Communication and Public Engagement Fundamentals

Emily Cloyd, American Association for the Advancement of Science, United States

The flagship Science Communication and Public Engagement Fundamentals module focuses on the core components of successful public engagement. Participants are introduced to the AAAS public engagement framework, a guide they can apply to all kinds of interactions. Participants learn how to identify a public engagement goal, determine the relevant audience, craft tailored messages to achieve their goal and rehearse their engagement scenario.

1:15-4:15 Engaging Policymakers

Emily Cloyd, American Association for the Advancement of Science, United States

The Engaging Policymakers module provides an overview of the science policy landscape and the role of science and scientists in the policy process. This workshop introduces basic best practices for engaging in dialogue with this target audience at a local, state or national level. Participants identify individual communication goals and develop short messages that will resonate with policy audiences.